S6161-RF-FSE-010

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[*SGML Version - See Change Record*]
TECHNICAL MANUAL

DESCRIPTION, OPERATION AND MAINTENANCE

DISPENSER, BEVERAGE CRATHCO

DEPARTMENT OF THE NAVY NAVAL SEA SYSTEMS COMMAND

RECORD OF CHANGES

CHANGE NO.	DATE	TITLE OR BRIEF DESCRIPTION	ENTERED BY

NOTE

THIS TECHNICAL MANUAL (TM) HAS BEEN DEVELOPED FROM AN INTELLIGENT ELECTRONIC SOURCE KNOWN AS STANDARD GENERALIZED MARKUP LANGUAGE (SGML). THERE IS NO LOEP. ALL CHANGES, IF APPLICABLE, ARE INCLUDED. THE PAGINATION IN THIS TM WILL NOT MATCH THE PAGINATION OF THE ORIGINAL PAPER TM; HOWEVER, THE CONTENT IS EXACTLY THE SAME. ANY CHANGES RECEIVED AFTER RECEIPT OF THIS TM WILL ONLY FIT IN THIS PAGINATED VERSION.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ILLUSTRATIONS

CHAPTER 1

TECHNICAL MANUAL DISPENSER, BEVERAGE, MECHANICALLY REFRIGERATED

MODEL D25-4 BEVERAGE DISPENSER MIL-D-82035C
EFFECTIVE: 1-01-1988
SERIAL NOS: 0001 and up
ELECTRICAL RATING: 115/1/60 AC. FULL LOAD CURRENT 5.5 amps.
COUNTER SPACE: 10″ deep - 17 1/2″ wide
SIZE OVERALL: 15″ deep x 17 1/2″ wide x 27 5/16″ high

MODEL D25-4 SPECIFICATIONS

SHIPPING CARTON SIZE:	GROSS WT./lbs.	NET WT./lbs.	CUBE (ft.)
23″ x 22 5/8″-16 1/2″	80	68	4.96

MODEL D15-4 BEVERAGE DISPENSER MIL-D-82035C
EFFECTIVE: 1-01-1988
SERIAL NOS: 0001 and up
ELECTRICAL RATING: 115/1/60 AC. FULL LOAD CURRENT 2.8 amps.
COUNTER SPACE: 10″ deep x 9 3/4″ wide
SIZE OVERALL: 15″ deep x 9 3/4″ wide x 27 5/16″ high

MODEL D15-4 SPECIFICATIONS

SHIPPING CARTON SIZE:	GROSS WT./lbs.	NET WT./lbs.	CUBE (ft.)
23″ x 22 5/8″ x 16 1/2″	52	40	4.96

MODEL D35-4 BEVERAGE DISPENSER
EFFECTIVE: 1-01-1988
SERIAL NOS: 0001 and up
ELECTRICAL RATING: 115/1/60 AC. FULL LOAD CURRENT 8.5 amps.
COUNTER SPACE: 10″ deep x 25 5/8″ wide
SIZE OVERALL: 15″ deep x 25 5/8″ wide x 27 5/16″ high

MODEL D35-4 SPECIFICATIONS

SHIPPING CARTON SIZE:	GROSS WT./lbs.	NET WT./lbs.	CUBE (ft.)
29 1/4″ x 22 5/8″ x 16 1/2″	104	86	6.31

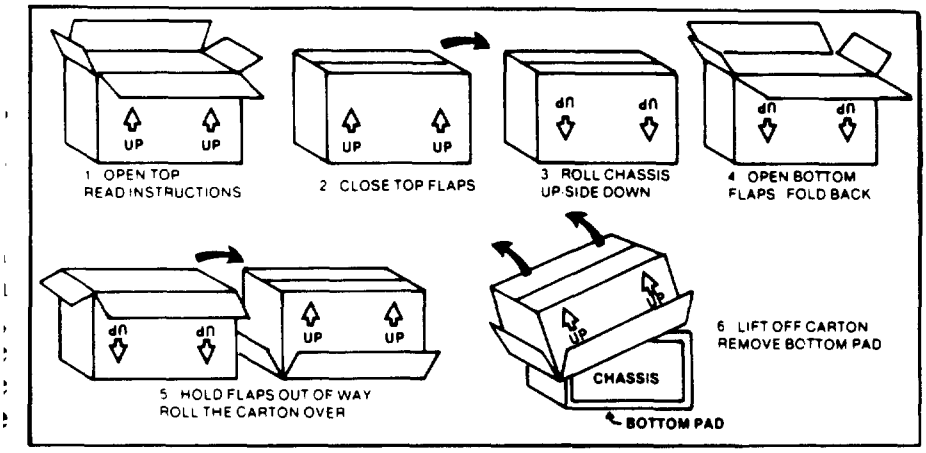
SECTION

STANDARD UNITS INSTALLATION AND OPERATING INSTRUCTIONS MODELS D15-4, D25-4 & D35-4

1. UNPACKING:

Your dispenser is in two (2) cartons. One is the ″chassis pack″ and contains the refrigeration cabinet. The other is the ″bowl pack″ and contains the bowl, its related parts, and the drip pan and covers.

1.1 Close the top carton flaps, and roll the carton over. Open the bottom carton flaps. Keeping them folded back, roll the carton right-side up. Lift the carton off the chassis. Do not pick the chassis up by the louvres. Pick up the base. Lift the chassis off the base pad. Make sure that the four rubber feet are on the legs of the cabinet and have not slipped off during unpacking.



UNPACKING

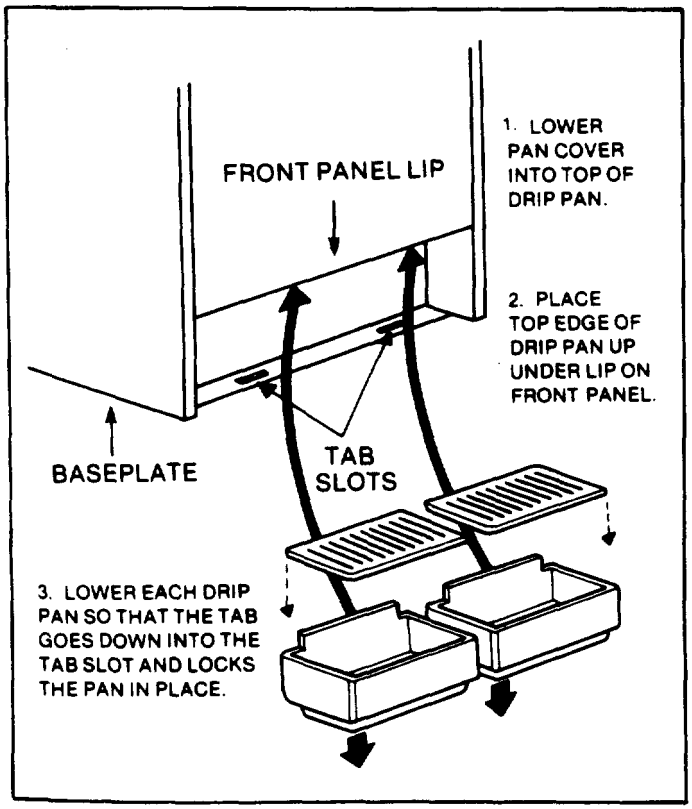
2. SETTING-UP:

Pick up the dispenser chassis by placing your fingers under the baseplate. Do not pick up by the ventilation slots. Place the unit on its operating location.

2.1 Make sure there are at least SIX INCHES OF AIR SPACE ON BOTH SIDES of the dispenser next to the ventilation slots. Model D35 must also have a minimum of 6″ air space along the back panel in addition to the standard 6″ side air space. This is for proper air flow, essential to efficient operation of your unit.

2.2 Make sure all switches are in the ″OFF″ position. Plug the service cord into a three-prong outlet. Where a standard two-prong wall receptacle is encountered, it is the personal responsibility and obligation of the customer to have it replaced with a properly grounded three-prong wall receptacle. If there is any doubt as to whether the wall receptacle is properly grounded, have it checked by a qualified electrician. Do NOT, under ANY circumstances, cut or remove the third (ground) prong from the power cord plug.

2.3 Place a drip pan cover in the top of each drip pan. Then assemble the drip pans onto the front of the dispenser.



SETTING UP

3. ASSEMBLING THE BOWL:

Set the bowl upside-down on a counter. Both the bowl gasket and the bowl neck should be dry. Place the bowl gasket over the neck of the large opening on the bottom of the wl.

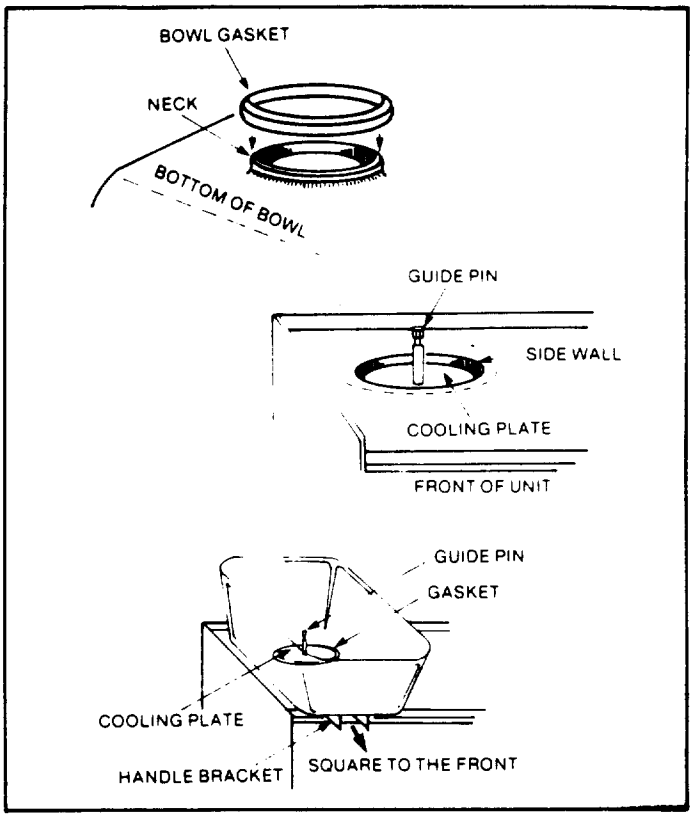
3.1 Place the bowl right side up, and with the bowl gasket centered on the cooling plate and guide pin. Grasp the bowl by opposite top corners. With a back and forth twisting motion and a downward pressure the bowl will slip down into position. Make sure the bowl is square to the front of the unit, with the handle bracket straight to the front and over the drip pan.

3.2 Place the bearing sleeve over the guide pin in the middle of the cooling plate. There are flats on the outside of the guide pin and on the inside of the bearing sleeve. Turn the bearing sleeve until the flats line up and it drops down onto the cooling plate. The flange on the bearing sleeve must rest on the cooling plate.

NOTE

The bearing sleeve will be locked in place and in its proper position after it slides down over the guide pin and rests on the cooling plate.

3.3 Place the impeller over the bearing sleeve, fin side up.



ASSEMBLING THE BOWL

3.4 Press the spray tube into the sleeve on the top of the pump cover. Make sure the spray tube is into the sleeve far enough so that the bowl cover will not hit it when the cover is put into place.

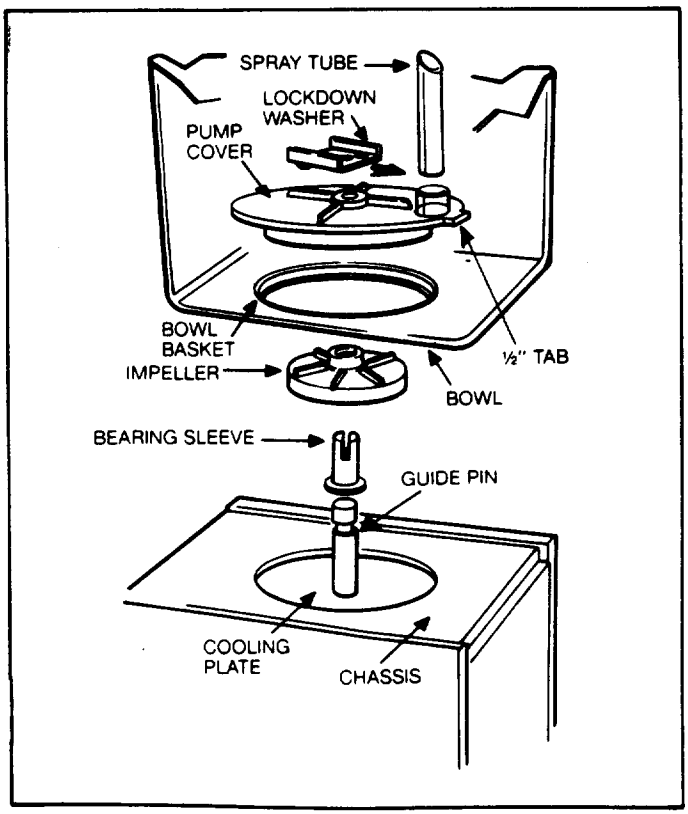
3.5 Place the pump cover over the guide pin, keeping the spray tube toward the front of the unit and centered in the bowl.

NOTE

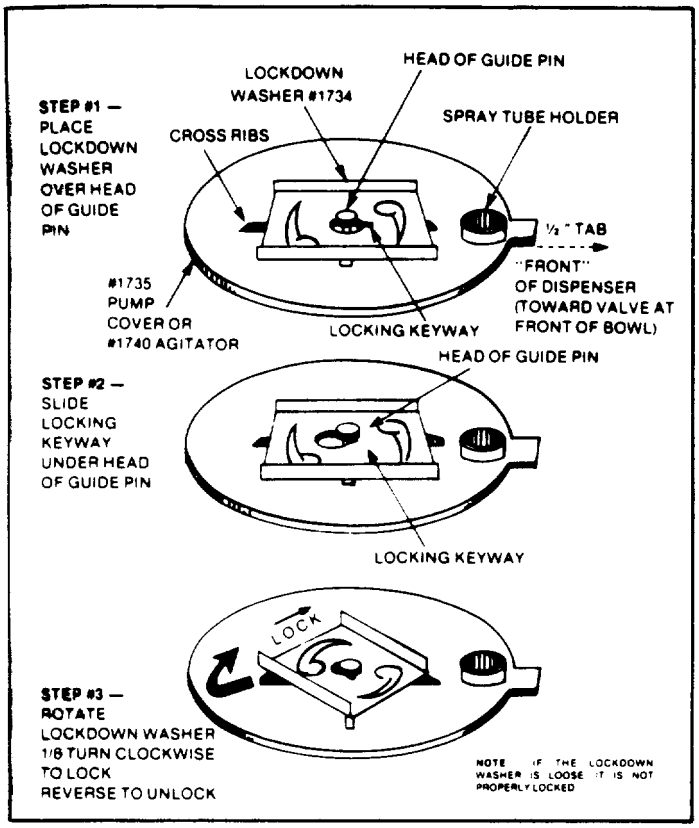
The 1/2″ tab on the front of the pump cover, next to the spray tube holder, goes between the two locator buttons on the inside bottom of each bowl.

3.6 Place the lockdown washer on the pump cover and over the head of the guide pin as in diagram (Page 4) ″Step #1.″ Slide the lockdown washer toward the back of the pump cover and under the head of the guide pin until the neck of the guide pin is completely in the locking keyway as in diagram ″Step #2.″ Turn the lockdown washer 1/8 turn to the right (rotate clockwise) to lock. To unlock, reverse ″Step #3,″ then ″Step #2,″ then lift off the lockdown washer, etc. The pump cover and the bowl are locked to the chassis by the lockdown washer. Be sure the lockdown washer is properly locked before operating the dispenser.

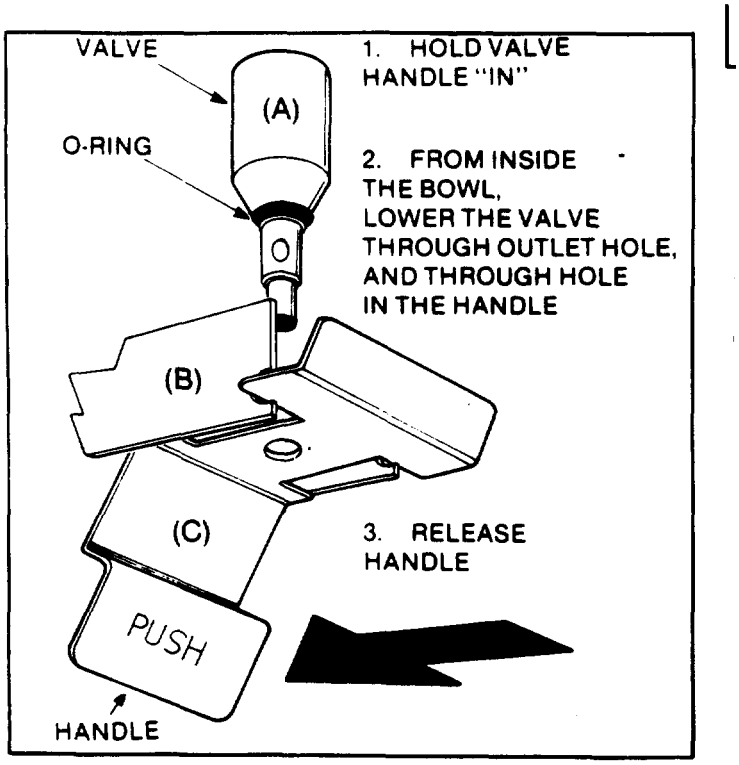
AGITATOR NOTE: When your dispenser is supplied with a special order Agitator in place of a Pump Cover (for tomato juice, viscose and heavy drinks, or drinks that foam), the Agitator is assembled in the same manner as the standard Pump Cover. (The Agitator has no Spray Tube. In all other respects assembly is the same as shown in 3.1 through 3.6 of these instructions.



AGITATOR NOTE 1



AGITATOR NOTE 2



AGITATOR NOTE 3

4. ASSEMBLING THE VALVE AND HANDLE:

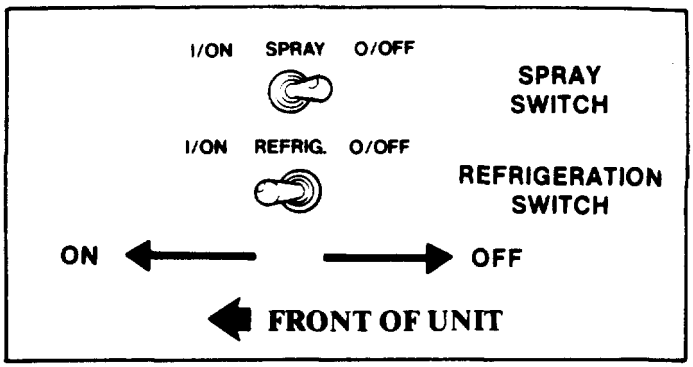
Place the handle (C) in the two ″V″ notches in the front of the handle bracket (B). While holding the handle in place and pushed back, lower the valve (A) (DO NOT DROP IT) down through the valve hole and through the hole in the handle. When the valve is seated on its O-Ring, release the handle. Push the handle in and release it several times to make sure the valve moves up and down freely. To seat the O-Ring, pressdown on valve and twist.

5. STARTING THE DISPENSER:

After filling the bowl, put its cover in place, making sure it is well down over the bowl edge and not just resting on the lip. Then move all switches to the left ″ON″ position. The lower switch controls the refrigeration system. The upper switch controls the units spray operation.

NOTE

The Model D15 has only one switch that controls both spray and refrigeration. D35 Models have two switches. Model D25 could have either 2 or 3 switches.



STARTING THE DISPENSER

ROUTINE MAINTENANCE

WASHING YOUR DISPENSER: This dispenser is designed to provide easy disassembly for cleaning, ease of cleaning component parts, and quick reassembly. Be sure to wash all bowl components and the top of your dispenser regularly so as to insure proper sanitation and consistent and accurate flavor of the juice or beverage. In addition, regular cleaning of bowl components will result in maximum pumping efficiency, proper seating and sealing, and prevention of leaks at the valve O-Ring and bowl gasket by removing dried-on beverage solids and pulp from moving and sealing parts. The rubber feet can also be readily removed for cleaning.

Before disassembly, shut off all switches. To disassemble, reverse the operations shown in the setting-up procedures on pages 2-4.

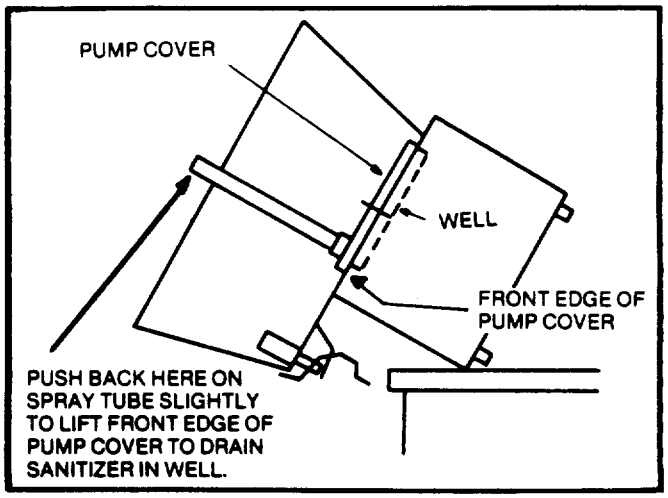
Be sure to handle your bowl and cover with care as plastic can be scratched with sharp edges or abrasives.

Wash all bowl parts as recommended below or as recommended by your local health authority:

1. Wash all bowl parts thoroughly in a mild detergent and warm water. Use a detergent such as ″Joy,″ or its equivalent, at a ratio of one (1) ounce per gallon of water.
2. Rinse in clean running water.
3. Reassemble unit.
4. In a bowl, mix a sanitizing solution of 100 ppm hypochlorite or its equivalent. Turn on spray motor(s) and allow sanitizer to spray around inside of the bowl for a period of time as recommended by the sanitizer manufacturer.

(Du Bois Chemical’s germicidal cleaner FSD-4 is satisfactory for this purpose when mixed in a solution of 1 liquid ounce of cleaner to 1 gallon of water. Immerse parts for 30 seconds. In areas with extreme hard water, consult the local health authority.)

5. Drain sanitizer COMPLETELY and THOROUGHLY during each step of the cleaning process (wash, rinse, and sanitize).
   (a) Drain all liquid possible thru the valve.
   (b) Tip dispenser forward and push back on top of spray tube using a sanitary or disposable glove. This will lift the front edge of the pump cover so that sanitizer in the well will drain to front of bowl and can be drained out of the valve (See illustration, below).



DRAINING SANITIZER

(c) Return dispenser to upright position.

6. Refill with beverage.

TAKING CARE OF YOUR DISPENSER: This dispenser, like all dispensers of this type, as well as your household refrigerator, is designed to run 24 hours a day. For best results, both the spray and refrigeration should be ″ON″ whenever beverage is in the bowl.

When and if you find it necessary to run your dispenser with only one bowl containing beverage, put one-half cup of water in the unused cooling plate depression for best one-bowl operation and efficiency.

Your dispenser has been manufactured to the highest standards of quality control. It is a quality product. Preventive maintenance and good care will give your dispenser long life. If anything should go wrong with your unit, simple maintenance right on-location will correct almost all problems.

Examine the bowl gasket and valve O-Ring during each wash-up. If either has developed nicks, or has become worn, or has sustained other damage due to misuse or accidental abuse, replace at once.

Periodically clean the condenser (radiator) of the refrigeration system by removing dust and lint from the fins. To clean the condenser, first shut off all switches and pull the plug from its outlet. Then, remove the side and front panels from the unit with a screwdriver. Cleaning the fins of the condenser allows air to move freely through, giving the most efficient operation possible.

If you have a refrigeration system failure, the complete hermetically sealed system will be repaired or replaced at any time during either warranty period. If such replacement takes place during your 15-month first warranty, no charge will be made for the repair or replacement. If such replacement takes place during the second four-year warranty on the sealed system only, you will be charged for labor. (See Warranty on inside back cover.)

If at any time you need spare parts, contact the factory or your nearest authorized service station.

STEPS FOR REPLACING TEMPERATURE CONTROL When you remove the old Temperature Control, be sure to note how it is mounted and note the shape and location of the tubing attached to the control.

Be sure you get the tubing from the new control into the same hole. The tubing of the new control slides into 3/16″ diameter copper tubing, which is attached to the evaporator.

Dig away any old mastic or foam until you see the end of the 3/16″ tube to make sure that the tubing from the new control goes inside of it.

The tube has to go inside about 8 1/2″ for models D15 and D25 and about 16 1/2″ for model D35; be sure to get it in all the way.

TEMPERATURE CONTROL ADJUSTMENT The dispenser should maintain the beverage in the vicinity of 34°F to 40±F. Variations will occur from unit to unit and also with the types of beverages used.

On multi-bowl dispensers, both bowls are controlled with one temperature control. The control is factory set and should not need adjusting. In the event a new control is installed, it may need some adjustment.

Check as follows and adjust if necessary.

1. Place a thermometer in the beverage in the bowl. On multibowl units, place thermometer in coldest bowl.
2. The compressor should ″cut out″ between 35°F and 36°F.
3. The compressor should ″cut in″ between 40°F and 41°F.
4. Note the 2 adjusting screws on the side of the temperature control. Turn the appropriate screw in a clockwise direction to make the ″cut in″ or ″cut out″ colder. Turning the screws in a counter-clockwise direction will make the compressor ″cut in″ or ″cut out″ at a higher temperature. An adjustment of 1/4 turn will raise or lower the settings about 1 1/2°F.

INSTRUCTIONS FOR INSTALLING PUMP AND FAN MOTORS

1. Unplug dispenser service cord to avoid electrical shock risk.
2. Remove cabinet panels.
3. Disconnect wires leading from motor to terminal board and/or switch.
4. Loosen bolts holding motor in place and replace with new motor.

NOTE

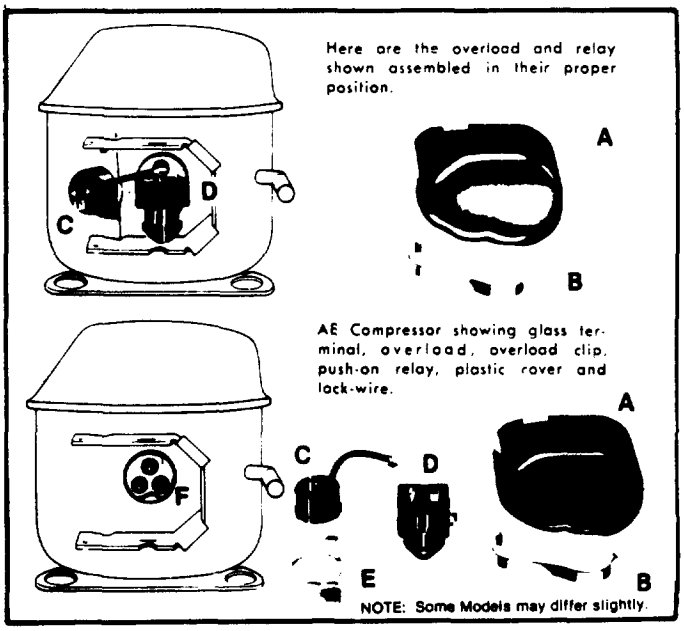
Loosen bolts that hold top tray to frames for easier pump motor installation. Retighten bolts after reassembly.

5. Connect wires from new motor to terminal board and switch.
6. Replace cabinet panels.

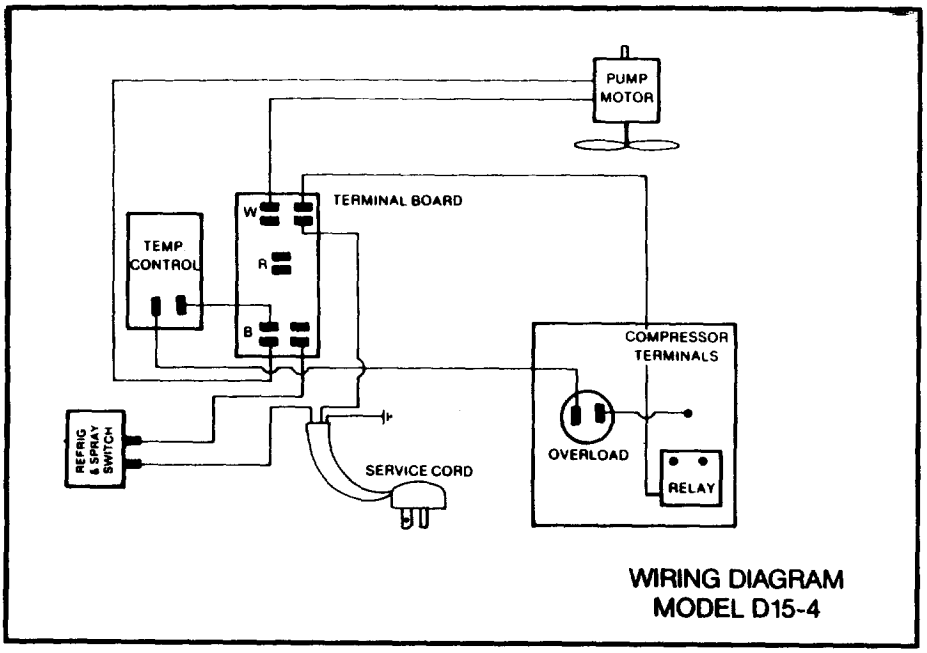
REPLACEMENT OF COMPRESSOR OVERLOAD AND RELAY

1. Disconnect dispenser service cord and remove front panel.
2. Remove plastic cover (A) and lock wire (B) from compressor housing and note positions of overload (C), relay (D) and wiring.
3. Disconnect overload (C) from housing and wires, put overload spring clip (E) on new overload, then rewire and replace in proper position on compressor.
4. Pull off relay (D) and disconnect wires, then rewire and push new relay onto the compressor terminals (F).

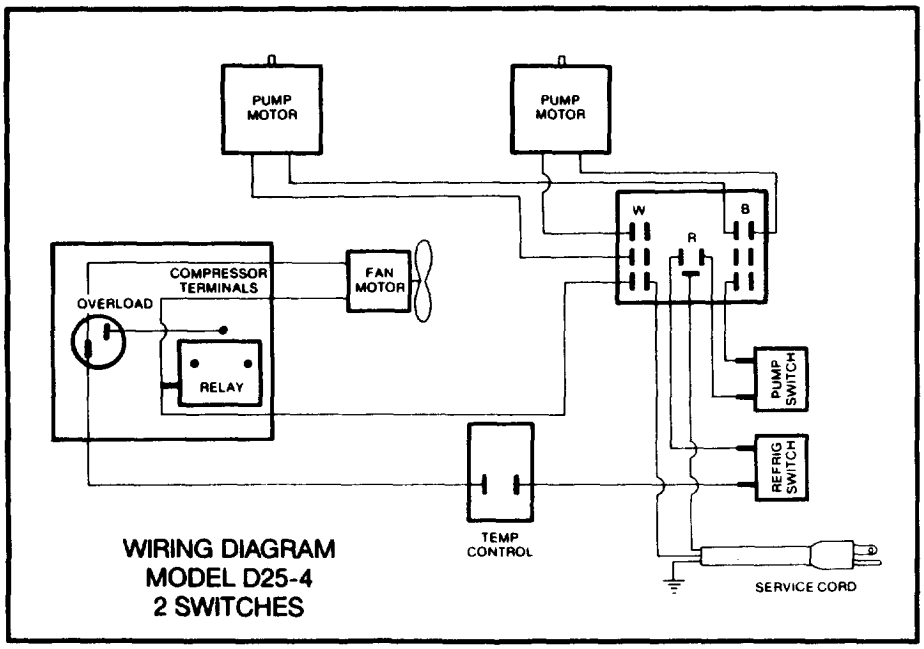
5. Replace plastic cover (A) and lock wire (B), front panel of dispenser, and service cord to power supply.



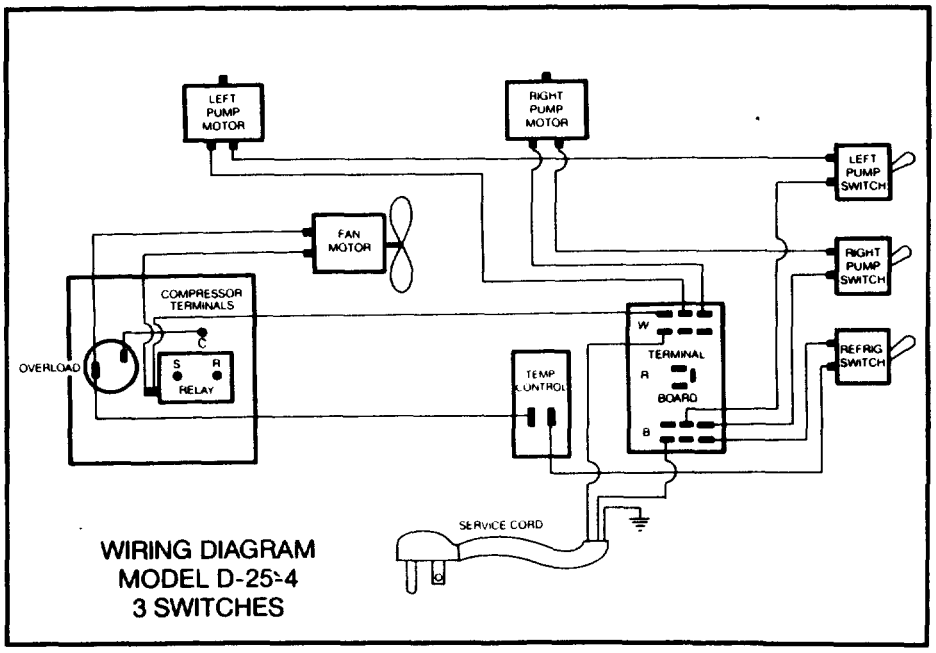
ASSEMBLED MODEL



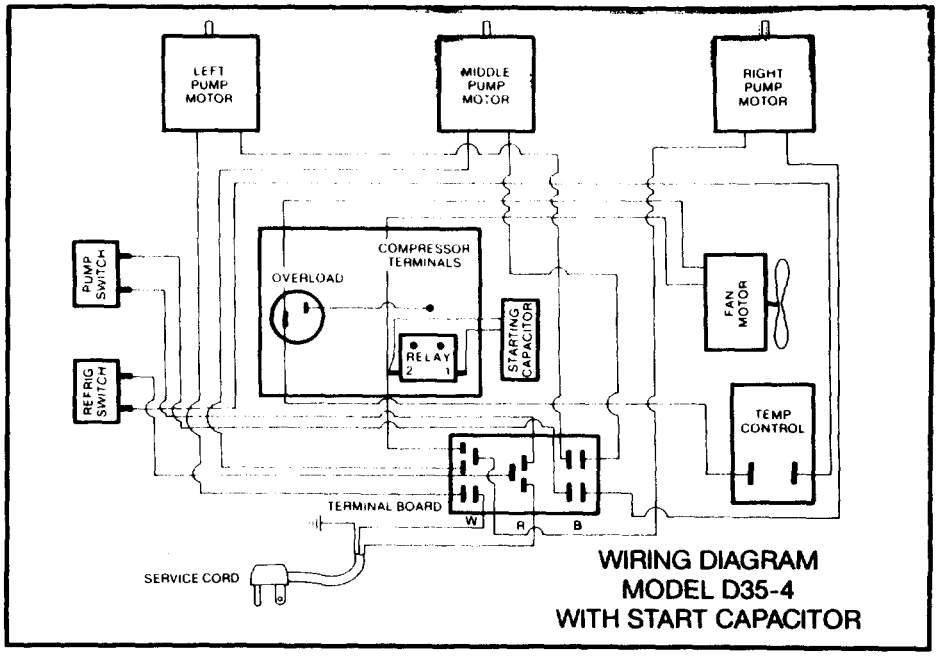
WIRING DIAGRAM MODEL D15-4



WIRING DIAGRAM MODEL D25-4 2 SWITCHES



WIRING DIAGRAM MODEL D-25-4 3 SWITCHES



WIRING DIAGRAM MODEL D35-4 WITH START CAPACITOR

TROUBLESHOOTING GUIDE

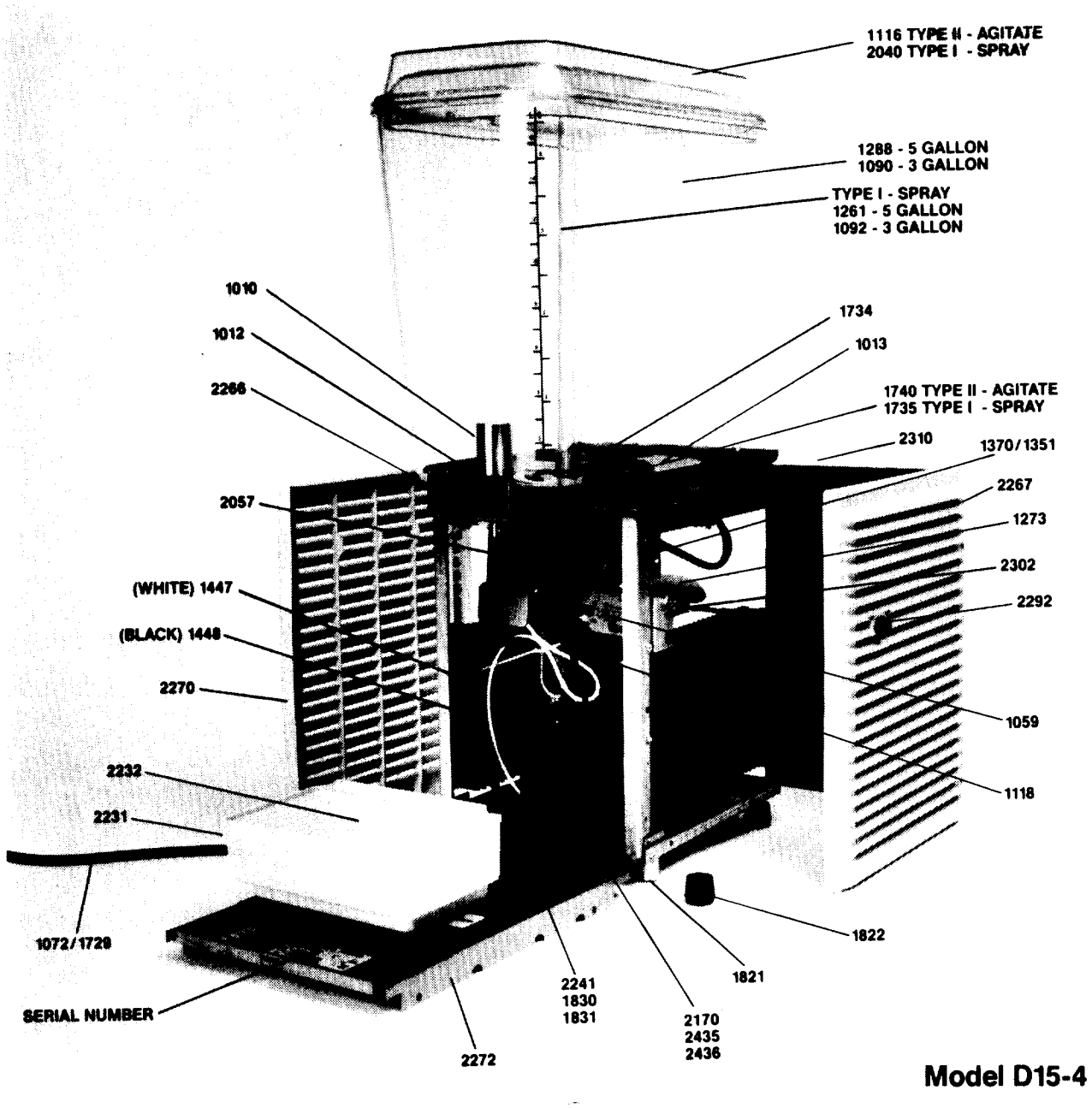
Sheet 1 of 1

Crathco

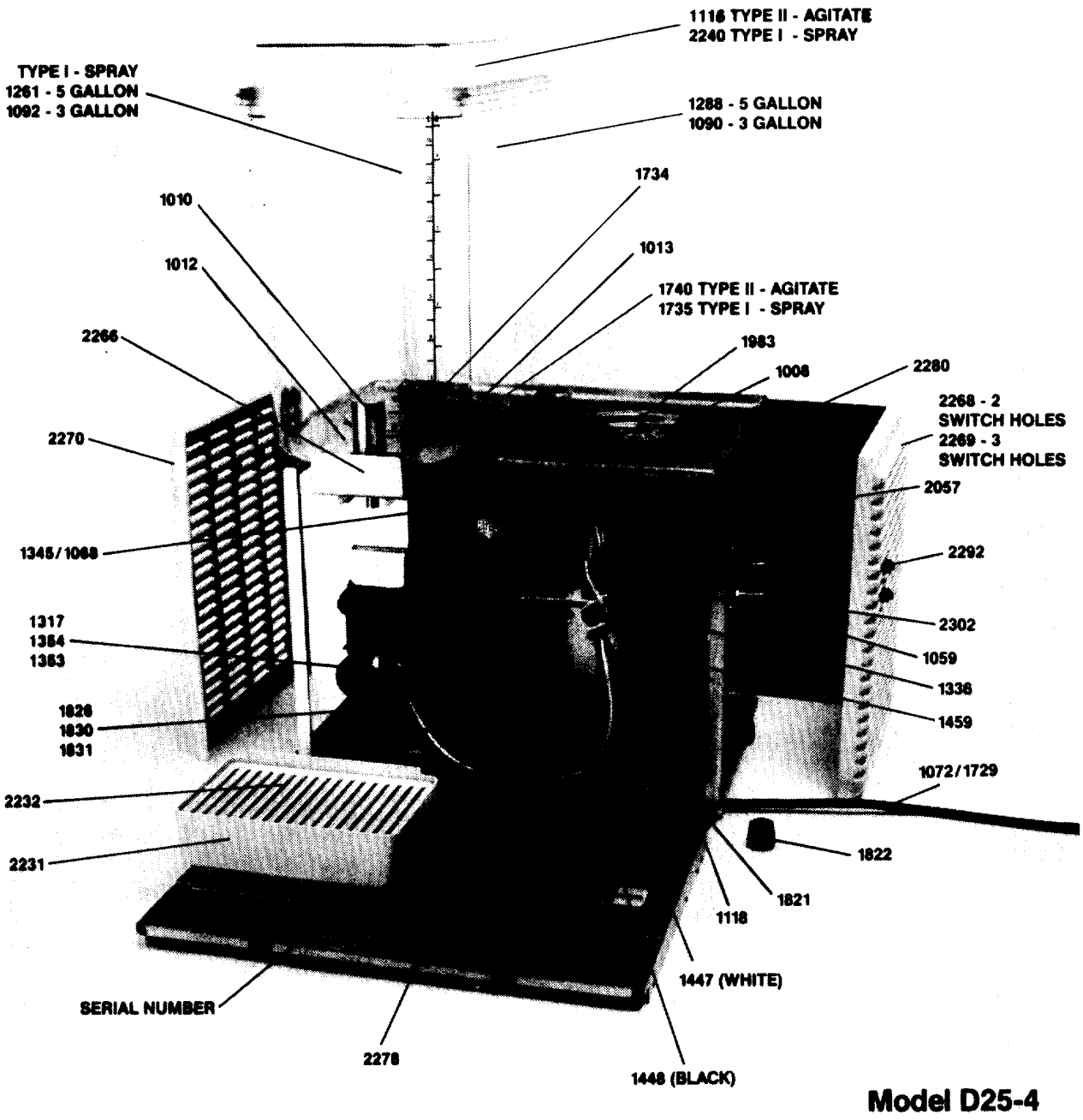
TROUBLE SHOOTING GUIDE

TROUBLE	POSSIBLE CAUSES	REMEDY
NO OR PARTIAL REFRIGERATION: COMPRESSOR RUNS NOTE: Unit must spray or agitate properly to obtain cooling.	1. Condenser clogged with dust or lint 2. Faulty fan motor 3. Loss of refrigerant	1. Remove front panel and clean out all lint and dust. Use vacuum cleaner or bottle brush. 2. Replace Motor 3. Return to factory
NO REFRIGERATION: COMPRESSOR DOES NOT RUN NOTE: Unit must spray or agitate properly to obtain cooling.	1. Temperature control open 2. Faulty refrigeration switch 3. Faulty electrical connection 4. Compressor cycles on overload protector 5. Defective compressor overload protector 6. After checking all of above, if compressor doesn't run	1. Replace temperature control 2. Replace switch 3. Locate and correct 4. Check for low line voltage. Then check relay and overload and replace if necessary. 5. Replace 6. Return to factory
NO SPRAY OR AGITATION: SPRAY MOTOR RUNS	1. Pump impeller does not spin; check for worn bearing sleeve and/or impeller (impeller rubbing on stainless steel evaporator) 2. Pump impeller does not spin freely on bearing sleeve 3. Impeller chatters but does not spin properly	1. Replace sleeve and/or impeller 2. Clean impeller bearing. Ream out impeller bearing, if necessary. Impeller must spin freely on bearing sleeve. 3. Raise drive magnet higher on motor shaft, but not high enough to rub.
NO SPRAY: SPRAY MOTOR DOES NOT RUN	1. Faulty motor 2. Faulty spray switch 3. Loose electrical connection to motor 4. Drive magnet binds on plastic evaporator cover	1. Replace motor 2. Replace spray switch 3. Locate and correct 4. Relocate magnet (NOTE: Magnet should be about 1/16" from plastic to prevent binding or rubbing)
LEAKY BOWL	1. Worn or nicked bowl gasket 2. Gasket improperly installed	1. Replace gasket 2. Reinstall gasket. Check directions for bowl assembly
LEAKY VALVE	1. Foreign particles on valve, O-Ring or valve stem 2. Nicked or cut O-Ring 3. O-Ring twisted so will not seat uniformly	1. Clean valve and O-Ring 2. Replace O-Ring 3. Remove and remount
NOISY UNIT	1. Worn bearings in either fan motor or spray motor 2. Bent fan blade	1. Replace motor(s) 2. Re-bend fan blade to correct alignment

TROUBLESHOOTING GUIDE - Continued


1116 TYPE II - AGITATE
2040 TYPE I - SPRAY
1288 - 5 GALLON
1090 - 3 GALLON
TYPE I - SPRAY
1261 - 5 GALLON
1092 - 3 GALLON
1010
1012
2266
2057
(WHITE) 1447
(BLACK) 1448
2270
2232
2231
1072/1729
SERIAL NUMBER
2272
2241
1830
1831
2170
2435
2436
1821
1822
1059
1118
2292
2302
1273
2267
1370/1351
2310
1740 TYPE II - AGITATE
1735 TYPE I - SPRAY
1013
1734
Model D15-4

Model D15-4


1116 TYPE II - AGITATE
2240 TYPE I - SPRAY
TYPE I - SPRAY
1261 - 5 GALLON
1092 - 3 GALLON
1288 - 5 GALLON
1090 - 3 GALLON
1734
1010
1013
1012
1740 TYPE II - AGITATE
1735 TYPE I - SPRAY
2266
1983
1008
2280
2268 - 2
SWITCH HOLES
2269 - 3
SWITCH HOLES
2270
2057
1345/1068
2292
1317
1354
1353
2302
1059
1336
1459
1826
1830
1831
1072/1729
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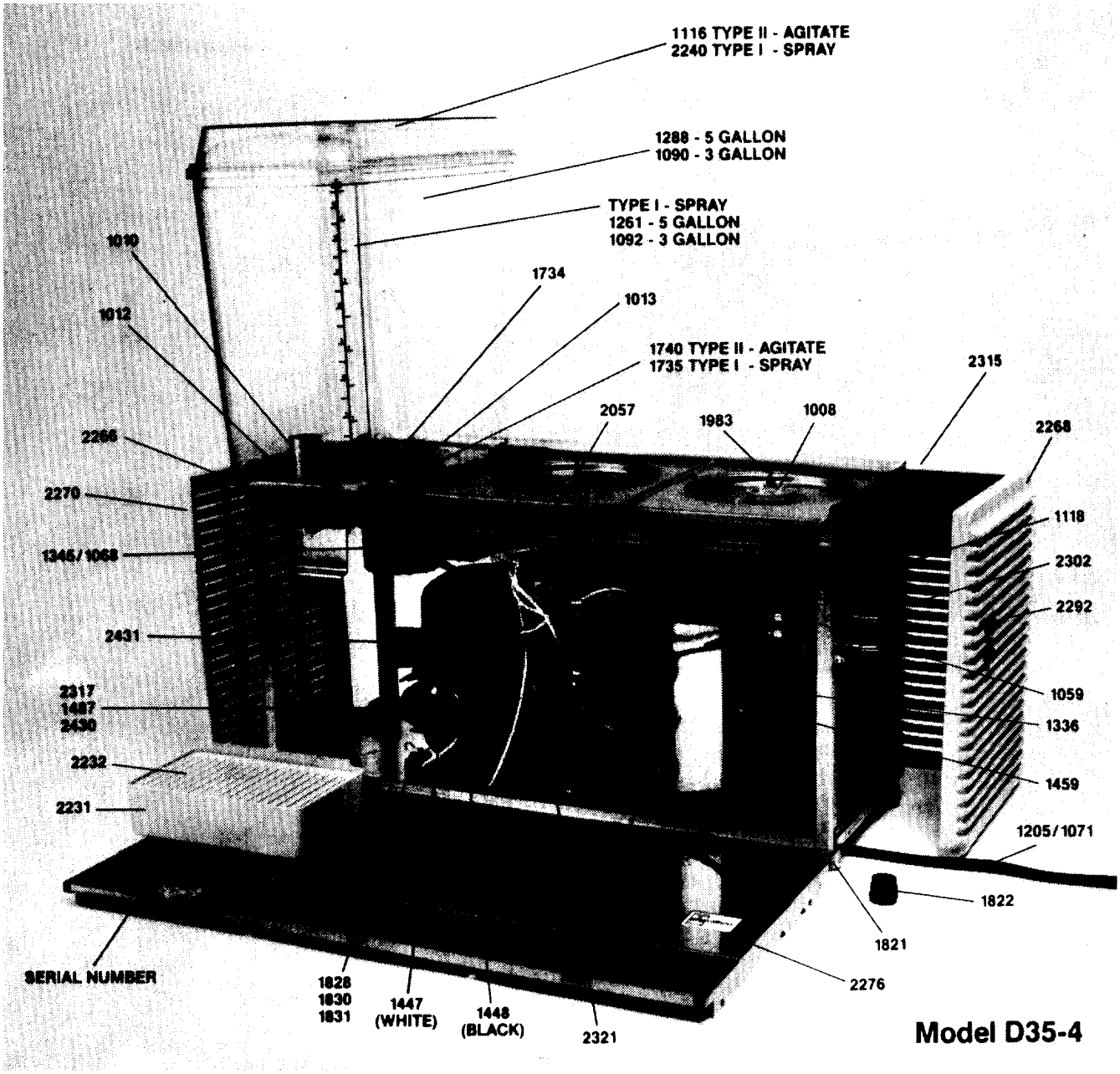
1822
2231
1821
1118
1447 (WHITE)
SERIAL NUMBER
2278
1448 (BLACK)
Model D25-4

Model D25-4


1116 TYPE II - AGITATE
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1288 - 5 GALLON
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1010
1012
1734
1013
1740 TYPE II - AGITATE
1735 TYPE I - SPRAY
2315
2057
1983
1008
2268
2266
2270
1118
1345/1068
2302
2292
2431
2317
1487
2430
1059
1336
2232
1459
2231
1205/1071
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1821
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SERIAL NUMBER
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1830
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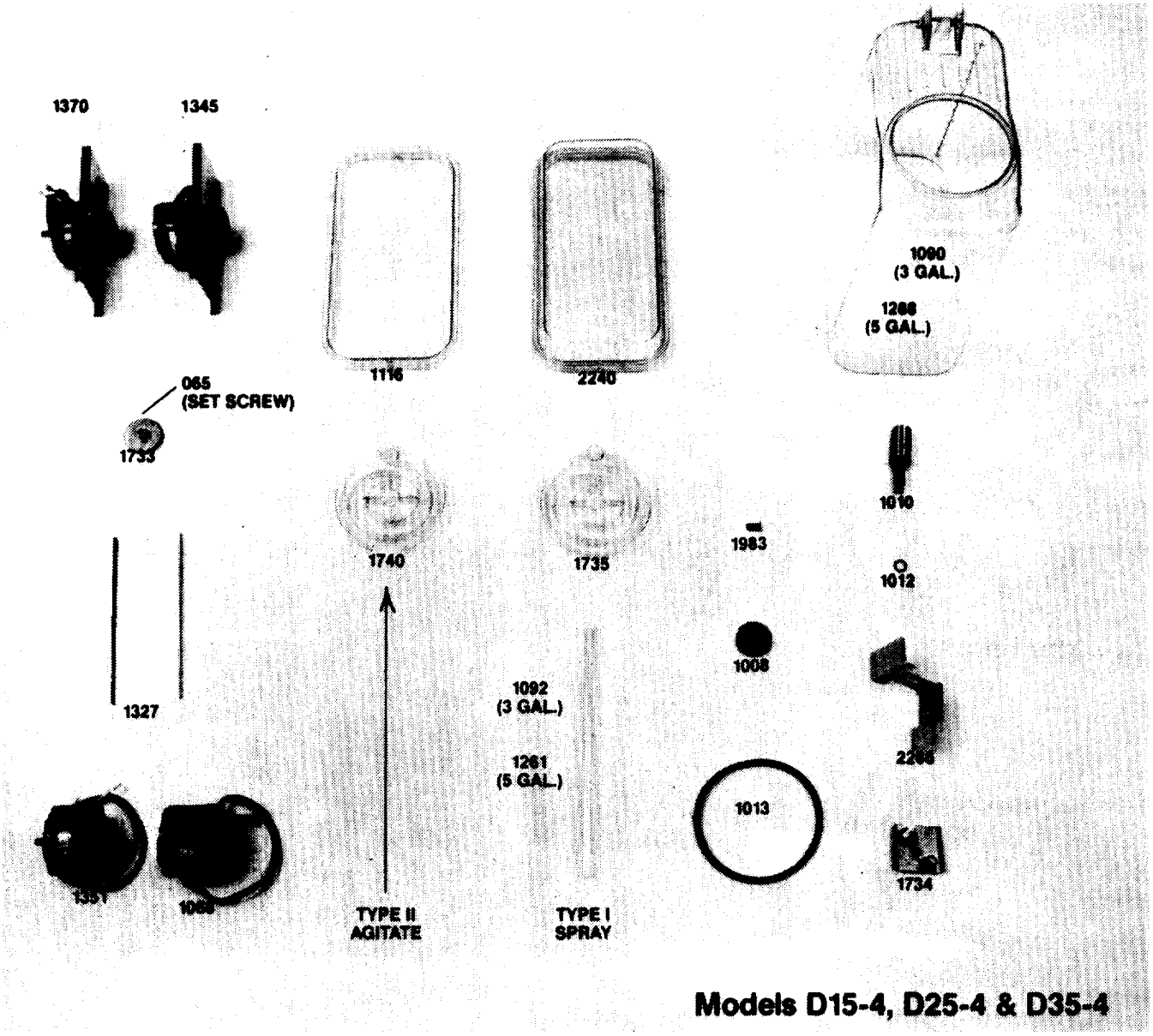
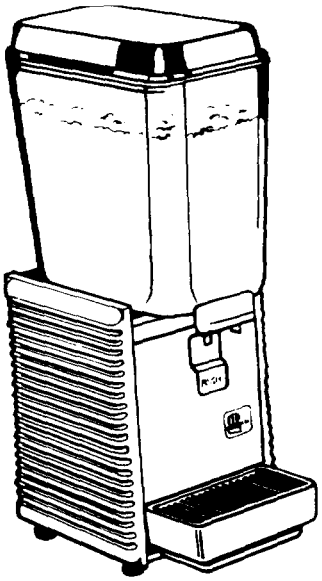
1447
(WHITE)
1448
(BLACK)
2321
Model D35-4

Model D35-4

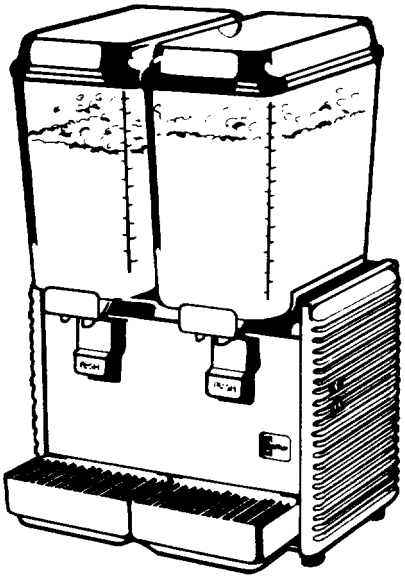


Models D15-4, D25-4, & D35-4



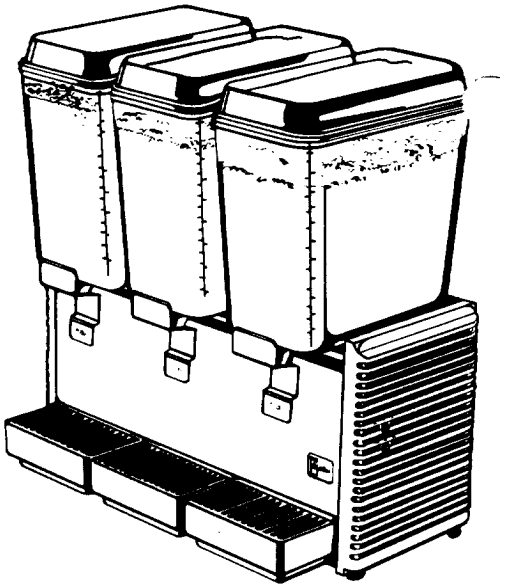
MODEL D15-4

MODEL D15-4



MODEL D25-4

MODEL D25-4



MODEL D35-4

MODEL D35-4

PARTS LIST

BOWL COMPONENTS	**3-Gallon Bowl**	**5-Gallon Bowl**
TYPE II (Agitate Models)		
Cover for Bowl	1116	1116
Agitator	1740	1740
TYPE I (Spray Models)		
Cover for Bowl	2240	2240
3-Gallon Spray Tube	1092	-
5-Gallon Spray Tube	-	1261
Pump Cover	1735	1735
COMMON PARTS		
3-Gallon Bowl	1090	-
5-Gallon Bowl	-	1288
Lock Down Washer, s/s	1734	1734
Bearing Sleeve	1983	1983
Impeller	1008	1008
Gasket	1013	1013
Handle	2266	2266
Valve (with O-Ring), s/s	1010	1010
O-Ring for Valve	1012	1012

NOTE

Crathco reserves the right to make engineering changes without notice.

PARTS LIST, 115V - 60Hz UNITS

CHASSIS COMPONENTS	**D25-4**	**D15-4**	**D35-4**
Back Panel, s/s	2280	-	-
Back Panel, s/s	-	2310	-
Back Panel, s/s	-	-	2315
L. H. Side Panel	2270	2270	2270
R. H. Side Panel	2269	2267	2268
Front Panel, s/s	2278	-	-
Front Panel, s/s	-	2272	-
Front Panel, s/s	-	-	2276
Drip Pan	2231	2231	2231
Drip Pan Cover	2232	2232	2232
Pump Motor & Drive Magnet Assembly	1345	-	1345
Pump Motor & Drive Magnet Assembly	-	1370	-
Pump Motor - Only	1068	-	1068
Pump Motor - Only	-	1351	-
Bracket for Pump Motor	1327	1327	1327
Drive Magnet Assembly	1733	1733	1733
Set Screws for Magnet Assembly	065	065	065
Fan Motor - Only	1336	-	1336
Fan Motor Bracket	1338	-	1338
Fan Blade	1459	1273	1459
On-Off Switch (w/nuts)	2302	2302	2302
Switch Boot	2292	2292	2292
Temperature Control	1059	1059	1059
Service Cord	1072	1072	-
Service Cord	-	-	1205
Compressor Overloads:			
(MRA-3798-34)	-	2435	-
(MRP-24HK-34)	1353	-	-
(MRT-22AIN-34)	-	-	1487
Compressor Relays:			
(9660-040-152)	-	2436	-
(9660-040-172)	1354	-	-
(9660-041-182)	-	-	2430
Compressor	1317	-	-065
Compressor	-	2170	-
Compressor	-	-	2317
Compressor Mounting Grommet	1828	-2241	1828
Compressor Mounting Clip	1831	-1831	1831
Compressor Mounting Washer	1830	-1830	1830
Terminal Board	2057	-2057	2057
Leg	1821	-1821	1821
Leg Tip (4)	1822	1822	1822
Strain Relief	1729	1729	-
Strain Relief	-	-	1071
Lead (Compressor to Terminal Board)	1447	1447	1447
Lead (Compressor to Temp. Control)	1448	1448	1448
Lead (Switch to Terminal Board)	1118	-1118	2321
Lead (Switch to Temp. Control)	1118	-1118	1118

PARTS LIST, 115V - 60Hz UNITS - Continued

CHASSIS COMPONENTS	**D25-4**	**D15-4**	**D35-4**
Lead (Temp. Control to Term. Board)	1118	1118	2321
Start Capacitor	-	-	2431

SPECIAL PARTS SOURCE REFERENCES MODELS D25-4, D15-4, AND D35-4

	CRATHCO MODEL	CRATHCO PART NO.	SUPPLIER PART NO.	
PUMP MOTORS				
Universal Electric Co. 300 East Main Street Owosso, Michigan 48867	D25-4/D35-4	1068	JA2C207D#	
	D15-4	1351	JA2C213N#	
FAN MOTORS				
General Electric Co. 2000 Taylor St. Fort Wayne, IN 46800	D25-4/D35-4	1336	KSP51CL3320	
	D15-4	(None)	(None)	
SWITCHES				
Carling Switch 505 New York Ave. W. Hartford, CT 06110	All	2302	2FA53-73-TABS	
TEMPERATURE CONTROLS				
Eaton Corporation/Controls Division Box 591 Athens, AL 35611	All	1059	Drawing 82-4250; 9530N98	
COMPRESSORS				
Tecumseh Products Co. Tecumseh, Michigan 49286	D25-4	1317	Model AE3425A: AE170AL-127-A4	
	D15-4	2170	Model AZ0387: AZ222CR012B6	
	D35-4	2317	Model AE4440A: AE234AL-725-B6	
COMPRESSOR OVERLOADS			**Tec. No.**	**Spencer No.**
Tecumseh Products Co. Tecumseh, Michigan 49286	D25-4	1353	P83940	MRP24HK34
	D15-4	2435	8300MRAJ19	MRA3798-34
	D35-4	1487	8300MRTA78	MRT22AIN34
COMPRESSOR RELAYS				
Tecumseh Products Co. Tecumseh, Michigan 49286	D25-4	1354	82626	9660-040-172
	D15-4	2436	8209660C34	9660-040-152
	D35-4	2430	82632	9660-041-182